localization and expression was revealed by immunohistochemical technique.

Results: We developed 14 primary GBL cultures. Staining for nestin was used for demonstration of neuronal origin of cell cultures. Analysis of gene expression and the rate of cell proliferation of the cultures showed that the rate of YB1 gene expression in slow proliferating cultures is significantly lower than in quickly proliferating cell populations. Cell cultures differed in temodal sensitivity 2–2.5-fold. We analyzed whether GBL cell sensitivity to temodal and the rate of several genes' expression are correlated. We did not find the correlation between cell temodal sensitivity and the rate of MGMT gene expression. These data are in accordance with some results of another authors (Mullins et al., 2013; Brennan et al., 2013). However, we revealed positive correlation of the temodal sensitivity of GBL cultures and MVP/LRP expression ($r = 0.5592$, $p = 0.04$). We found also the trend to negative correlation between GBL temodal sensitivity and YB1 gene expression ($r = -0.43602$, $p = 0.02$) as well as MDR1 expression ($r = -0.4195$, $p = 0.02$).

Conclusion: The rate of temodal sensitivity of GBL primary cultures is connected with the rate of the expression of MVP/LRP, YB1 and MDR1genes. It is likely that YB-1 protein affects temodal sensitivity by influence on DNA reparation. YB1 could also have an effect on MDR1 expression. MVP/LRP expression is independent factor of GBL prognosis.

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Notch-dependent crosstalk between stromal and neoplastic cells

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Malignant tumors consist not only of neoplastic cells, but also of various normal cells, for example fibroblasts, macrophages or endothelial cells. These normal cells stand under constant pressure of transformed cells, regulating their properties and converting them into tumor-promoting cells. Tumor-stroma interaction takes place during all stages of carcinogenesis. Notch activation upon receptor binding with the ligand is a way of direct intercellular communication during embryo- and histogenesis, determining various processes like differentiation, proliferation, etc. It has been previously shown that in tumors this signaling cascade regulates not only properties of transformed cells, but also stromal cells activities, i.e. neoangiogenesis. The Notch role in communication between neoplastic cells and stromal fibroblasts is underinvestigated.

Cancer-associated stromal fibroblasts (CAFs) are an important component of tumors secreting growth factors and proteases, modulating immune reactions and contributing to cancer stem cells niches formation. CAFs resemble myofibroblasts and express αSmooth-Muscle Actin (αSMA).

We obtained and characterized cultures of normal mesenchymal cells: a myofibroblasts-like (MF), and fibroblasts-like MC1 and MC2, differing by Notch1 expression. These cell cultures variously influenced growth of colon cancer notch- ligand Jagged2-positive HCT116 xenographs in nude mice. MF cells were characterized by the strongest while Notch1-deficient MC2 by the weakest tumor-promoting activity.

MC1 but not MC2 started to express αSMA upon co-cultivation in vitro with neoplastic HCT116 cells. Such co-cultivation also lead to Notch activation according to a luciferase reporter. NICD (Notch Intracellular Domain) expression activated MC1 and MC2, while Notch1 silencing in MC1 abrogated both HCT116-mediated activation of the fibroblasts in vitro and their tumor-promoting activity in vivo.

Notch signaling in mesenchymal cells stimulated TGFb production that lead to both autocrine and paracrine receptors stimulation. We believe that this cytokine activates fibroblasts in our experimental system. We also revealed that this process was p53-dependent.

So we have shown Notch1 to be involved in tumor-stroma interaction, particularly its activation leading to fibroblasts transdifferentiation. Notch1-stimulated fibroblasts are able to produce TGFb and to promote tumor growth in xenographs. The tumor-stimulating potency of various fibroblasts in our experimental system depends on their ability to transdifferentiate to myofibroblasts upon Notch activation.

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The role of intercellular interactions in the regulation of hormonal sensitivity of breast cancer cells

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The efficiency of endocrine therapy for tumors is limited by the development of hormone resistance and progression of tumor cells to hormone-independent phenotype. Among these tumors – breast cancers, for which hormone therapy is one of the most common and effective methods of treatment, but only in cases, when the tumors retain their hormonal dependence. The mechanism of hormonal independence was found to be based on the fundamental properties of cancer cell including both downregulation of specific hormone receptors, and affecting of intracellular signalling, particularly – estrogen-independent growth signaling pathways. However, the role of the intercellular interactions in the progression of hormonal resistance is still unclear.

We hypothesize, that the formation of the clone of the hormone-resistant cells in the tumor, and the subsequent common growth of the hormone-resistant and sensitive cells may lead to spread the hormonal resistance to the sensitive cells – as a result of the secretion of the specific factors acting in the paracrine manner or via the direct cell–cell contacts. Here, using the estrogen-dependent breast cancer cells MCF-7 and the resistant subline MCF-7/T developed by long-term cultivation of